



WRI INDIA | SUSTAINABLE
CITIES

TRANSIT ORIENTED DEVELOPMENT

CONFERENCE ON PLANNING & DEVELOPMENT OF SUSTAINABLE & SMART CITIES - TOWARDS REALITY

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TOD Concept

“Moderate and high-density housing, along with complementary public uses, jobs, retails and services, are concentrated in mixed-use developments at strategic points along the regional transit system.”

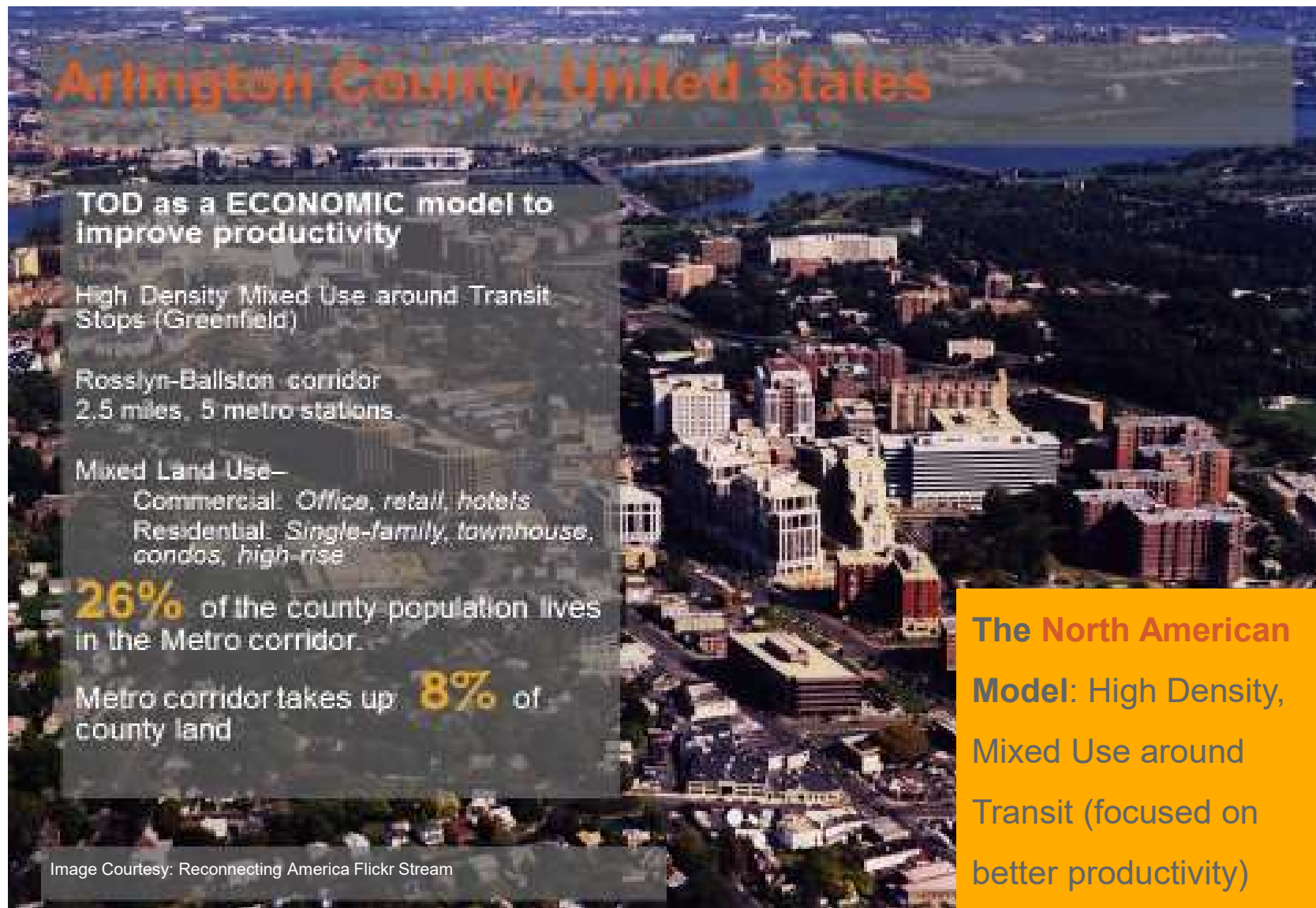
- Peter Calthorpe, The Next American Metropolis, 1993

What is TOD?

- TOD is typically defined as **more compact development within easy walking or biking distance of a transit station, typically a half mile**(Ewing, 1999)
- TOD is essentially **any development, macro or micro** that is focused **around a transit node**, and **facilitates** complete **ease of access** to the **transit facility**, thereby inducing people to prefer to walk and use public transportation over personal modes of transport. (MPD-2021).

Global TOD models

TOD Models



Continued...



Curitiba, Brazil

TOD as means to INTEGRATE LAND USE AND TRANSPORT to improve connectivity

- Integrated land use and transit
- Mixed land use
- Inclusion of affordable housing
- Protect historic city center
- Contain urban sprawl

Passengers per day on the BRT system **2.7 million**

The South American Model: High Density corridors connecting parts of the city (focus on Integrate land use and transport).

Continued...



Copenhagen, Denmark

Mode share of bicycle trips for work or education trips **52%**

TOD as a LIVABILITY and ACCESSIBILITY model to improve QoL

- Regional transport system
- Green fingers
- Decentralised concentration along transport corridors
- Pedestrian and bicycling priority

The European Model:

Mid Density, Mixed Use around public spaces connected with Transit, Biking and Pedestrian facilities (focused on better livability).

Image Courtesy: Amsterdamized, Flickr Stream

Continued.....



Inferences?

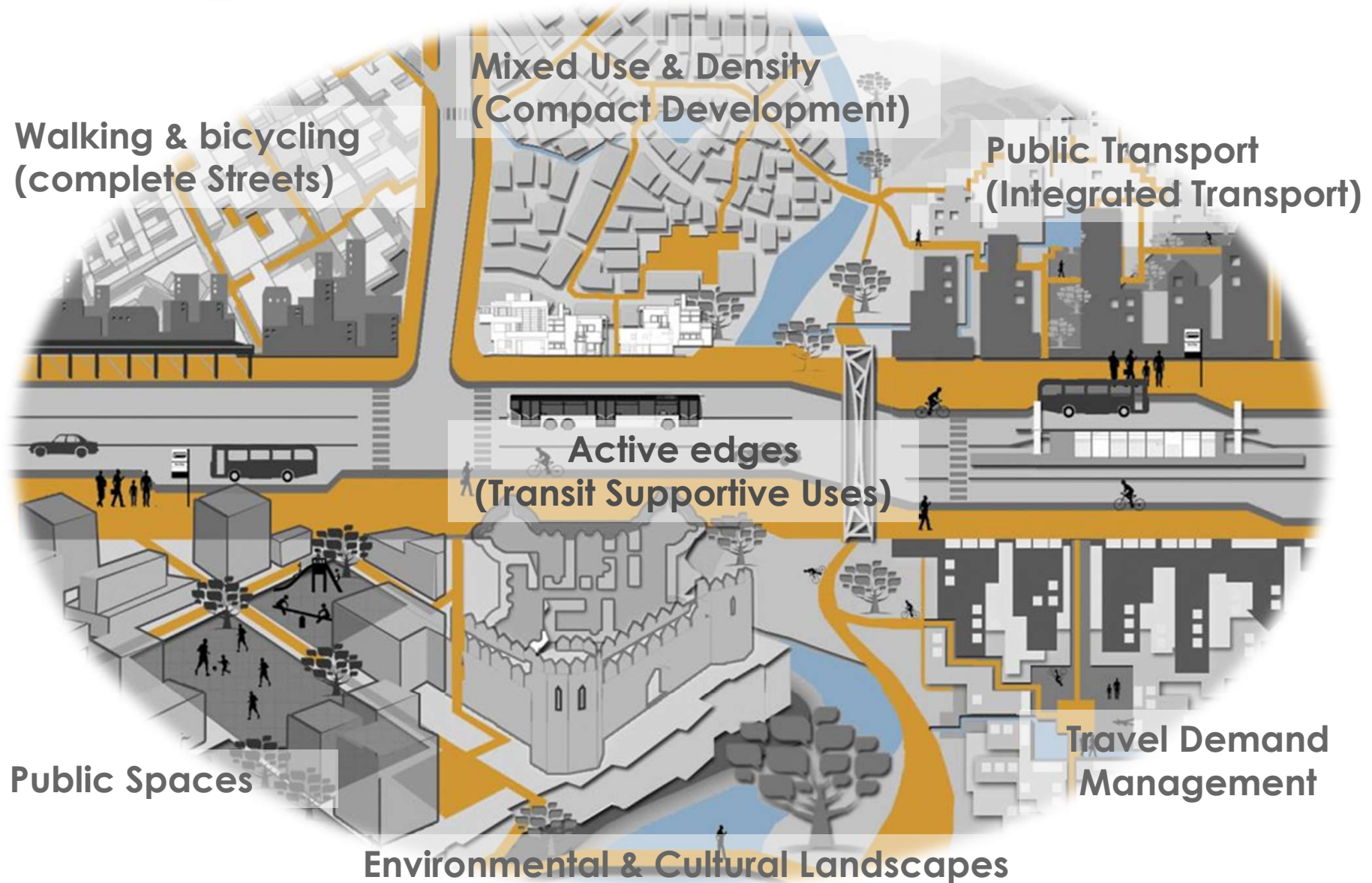
TOD...

- Is **NOT homogenous** i.e. One size doesn't fit all
- Should respond to **LOCAL context**
- Requires **LONG term** vision
- Land use and transit integration is **CRITICAL**
- Means to **IMPROVE** productivity
- Must address **LIVEABILITY**
- **EQUITY** is critical

Hence Customize.....

How to Customize for Indian Cities ?

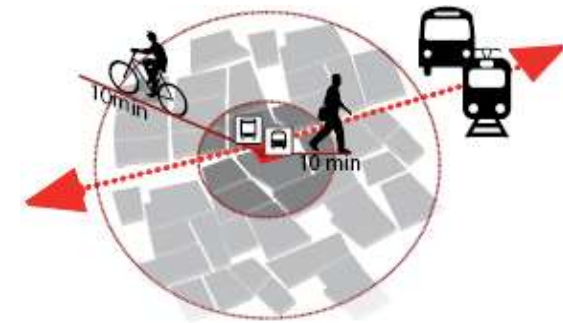
Through.....TOD Principles



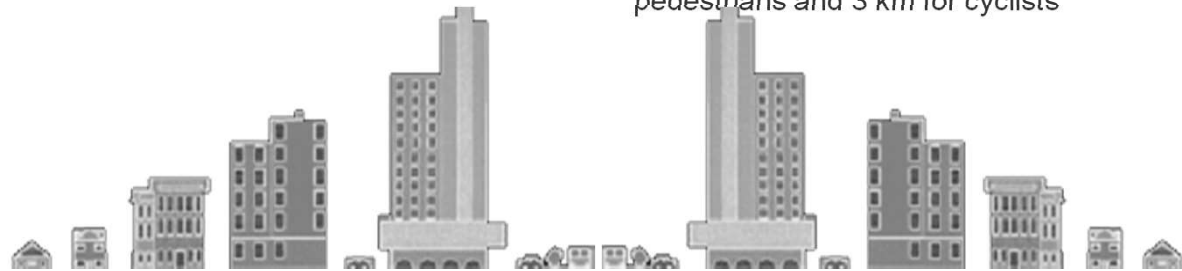
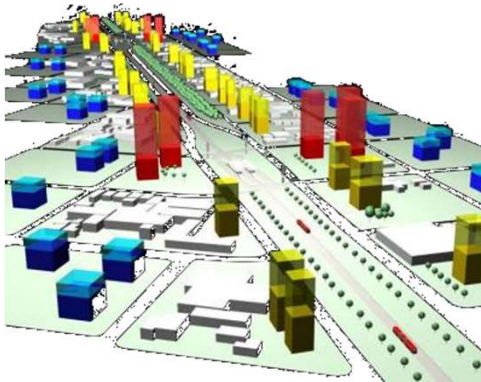
Walking & bicycling (complete Streets)



Mixed Use & Density (Compact Development)



Densify around transport nodes according to pedestrian and cycling 10-minute catchment areas; 800 meters for pedestrians and 3 km for cyclists



Densified horizontally along a wide area, becoming denser towards the transit nodes

Public Transport (Integrated Transport)



Weather protected stations with seating and real time information

Level



Dedicated priority lanes for public transport

Active edges (Transit Supportive Uses)



Vertical diversity—mix of functions and uses from floor to floor



Permeable frontages



Horizontal diversity

Public Spaces



Local markets reduce need for transport, while creating local jobs and a social forum.

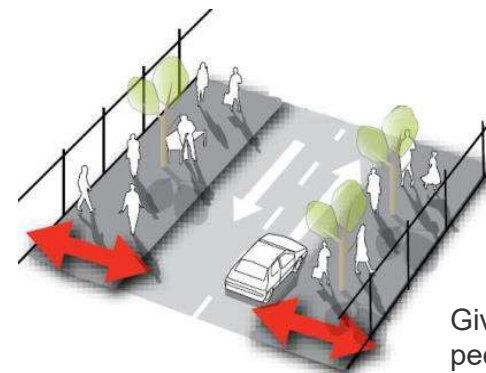
A meeting place for all. A place for all kinds of activities



Environmental & Cultural Landscapes



Travel Demand Management



Giving priority to
pedestrians and
cyclists

Why TOD for India?

- 10+ cities are opting for metro rail
- 7+ opting for BRT.
- Existing policy frameworks recognizes TOD as key development tool
e.g. statutory documents like Master Plans e.g. MPD-2021,
Ahmedabad Master Plan, NUTP mandates Integrated land use and
transport planning, national level guidelines like URDPFI guideline
2014.

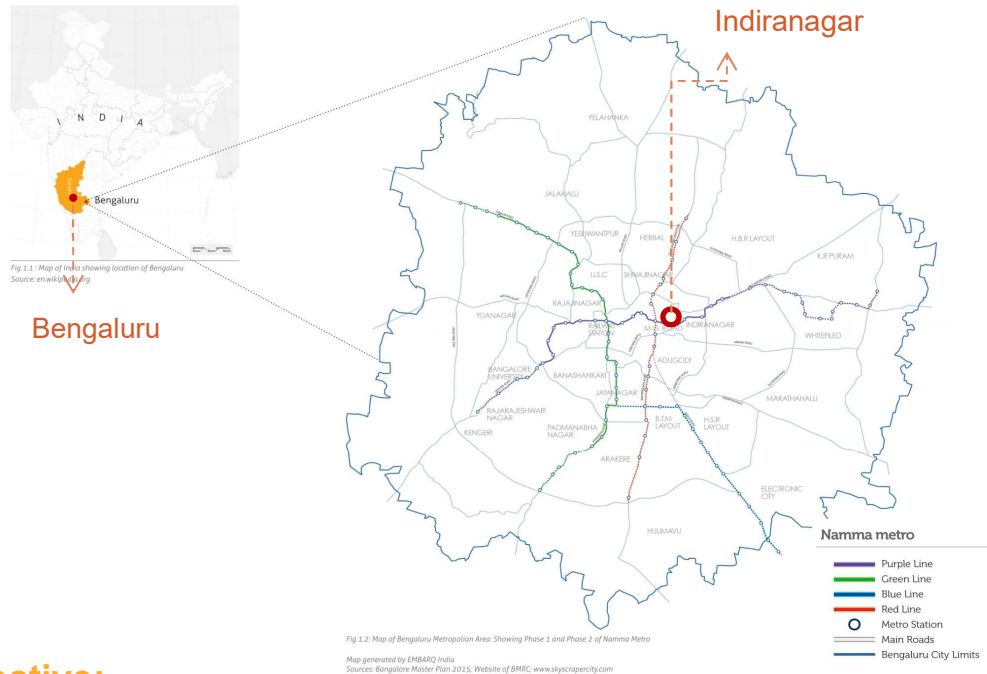
Translating TOD principles through projects



Indiranagar Metro Safe Access & DCR



Background & Objective

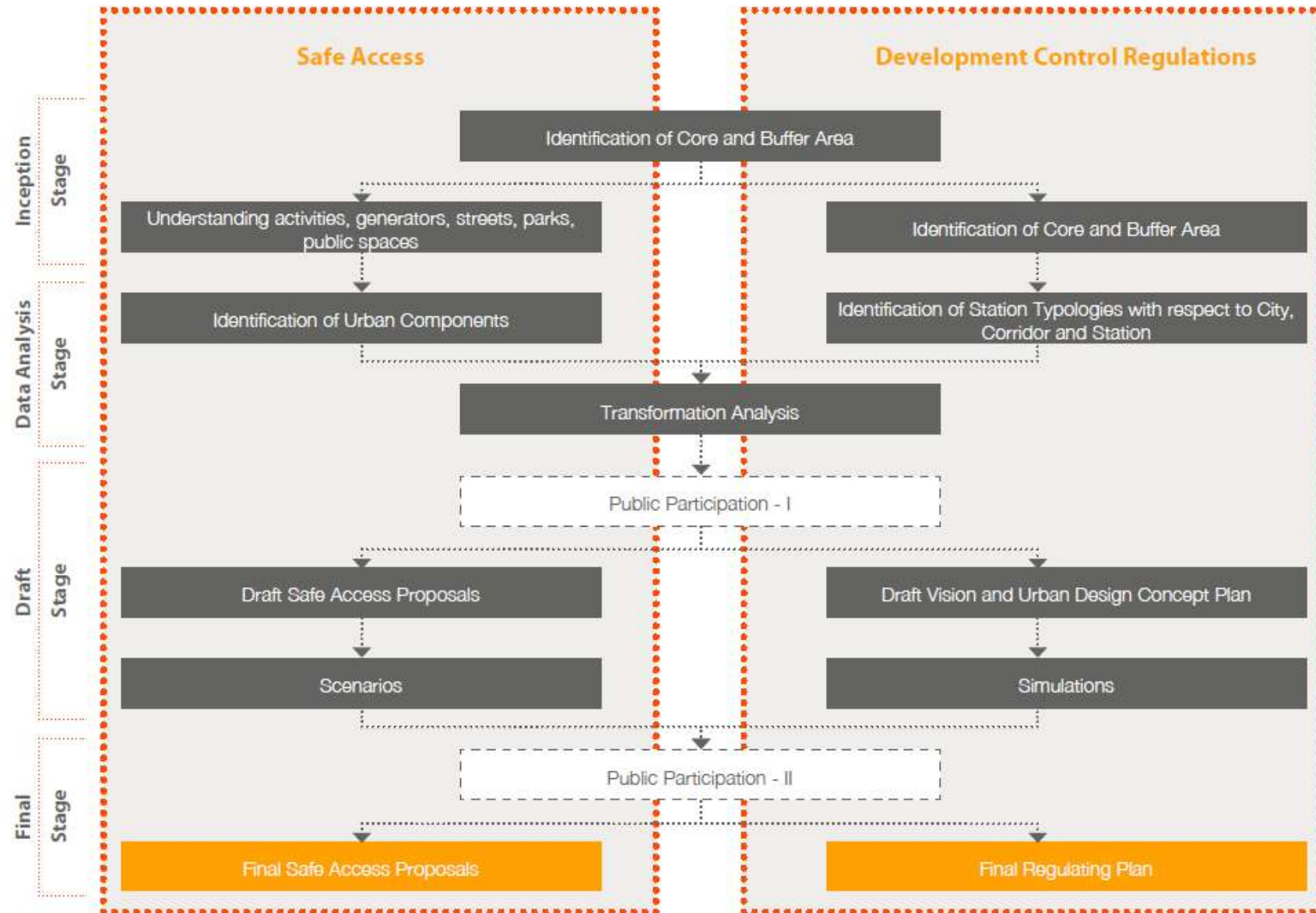


- 2003: DPR prepared
- 2006: Metro construction begins
- 2011: Reach 1 operational
- 2014: Reach 3 and 3A operational
- 2015: Complete Phase I expected to be operational
- 2019: Phase II expected to be operational

Objective:

- To facilitate a development trend that **discourages automobile dependent activities and encourages public transport** around the station area.
- To make the area **investment friendly** as well as inclusive
- To guide the design of built form to improve the street interface thereby creating a more **pedestrian friendly and safe environment**.
- To develop a station area analysis and **development plan methodology that can be applied to stations across the city** while ensuring that each **DCR proposal** caters to the needs of the context (ecological, historical, development) in which the station is set.

Methodology



Transformation Analysis

Safe Access Proposals

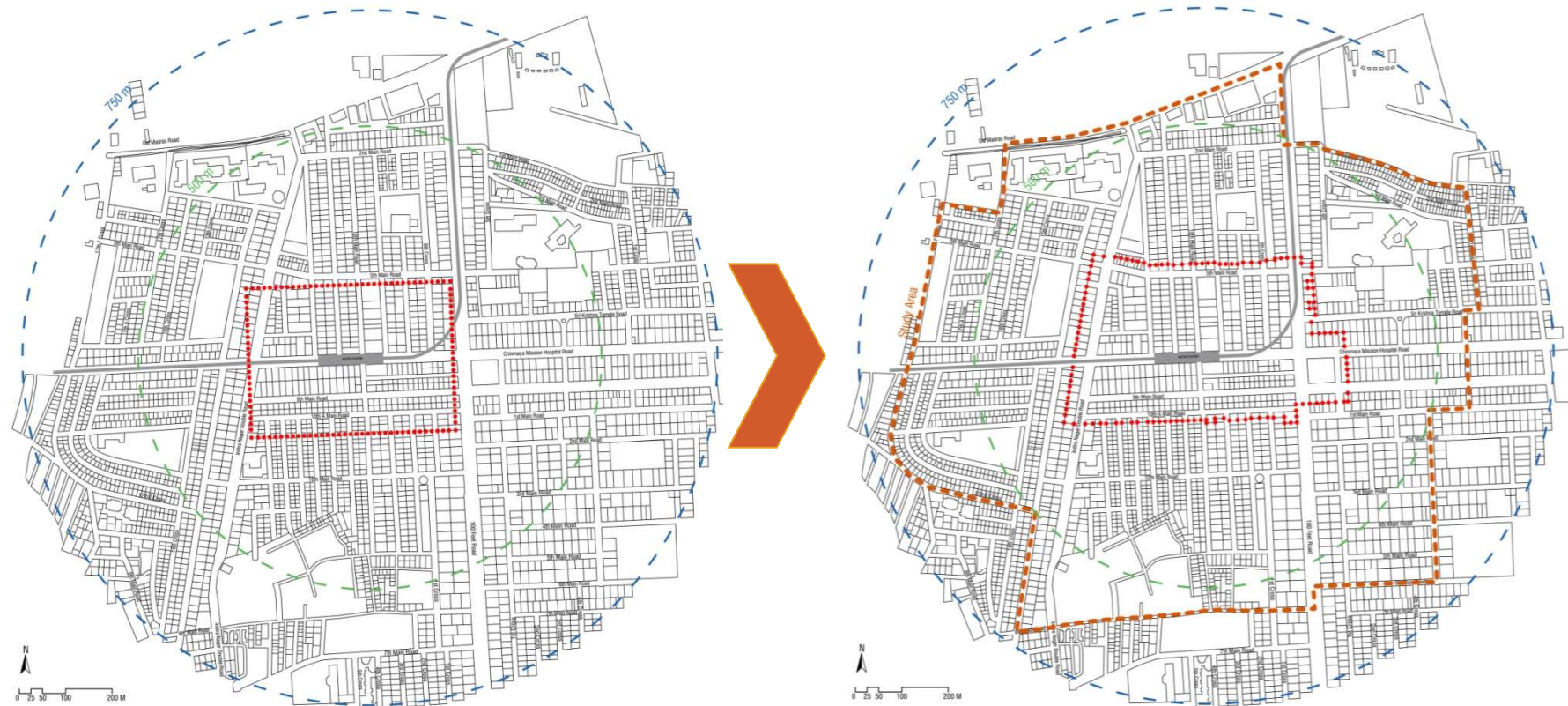
- Existing Landuse (compared to RMP 2015)
- Landuse mix (Floor wise)
- FAR (Achieved & Proposed)
- Building Heights (Achieved & Proposed)
- Road Hierarchy
- Natural Features
- Activities & Generators
- Street Rating

The aim of these analyses is to predict the transformations in these areas

Development Control Regulations

- Station Typology - Influence @ City, Corridor & Local levels
- Ecological Network
- Historical / Cultural Significance
- Plot Size
- Street Network
- Building Typology (Single Family, Apartment, Informal)
- Density
- Existing Landuse (compared to RMP 2015)
- Building Heights (Achieved & Proposed)
- Construction Activity
- FAR (Achieved and Proposed)
- Activity Generators and Informal Activities
- Pedestrian Movement Patterns & LOS
- Infrastructure Capacities

Identification of Core and Buffer Areas



Key Proposals

Key Strategies - SAP

Traffic Management	Provide traffic calming measures such as surface treatment, table top crossing
IPT & PT	Integrate bus stops and rickshaw stands with metro station
Continuity	Create complete and continuous pedestrian and NMT networks <i>(from entry and exit of metro station)</i>
Parking	Parking demand management, multi-level parking beyond core area
Street Design Guidelines	Safer intersections, reduced vehicular speeds, wider pavements, street furniture

Key Strategies - DCRs

Landuse	Enforcing mixed-use , minimum % for residential and ancillary uses
Ground Coverage	Increasing ground coverage to ensure maximum utilization of FAR
FAR	Redistributing the FAR over a 500m
Parking	Controlled parking regulations, encourage metro ridership -Parking maximums established -Parking included in FAR in Core Area -Restricted on-street parking
Street Design Guidelines	DCRs dovetail with Safe Access proposals to ensure a safe and walkable neighbourhood

Proposals

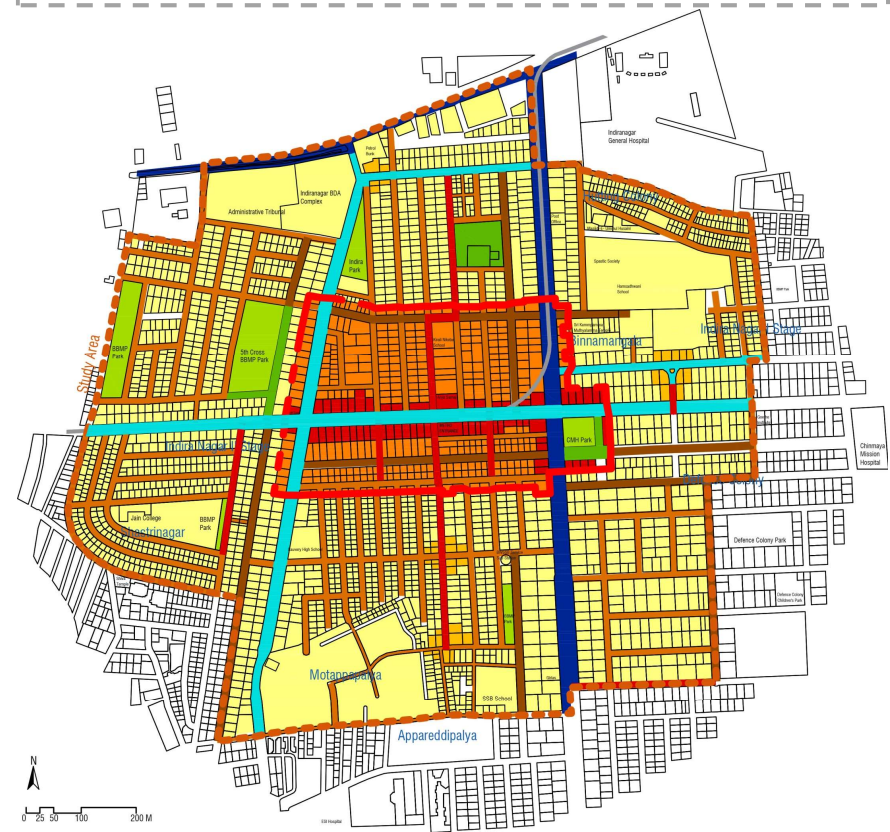
Safe Access Proposals



Legend



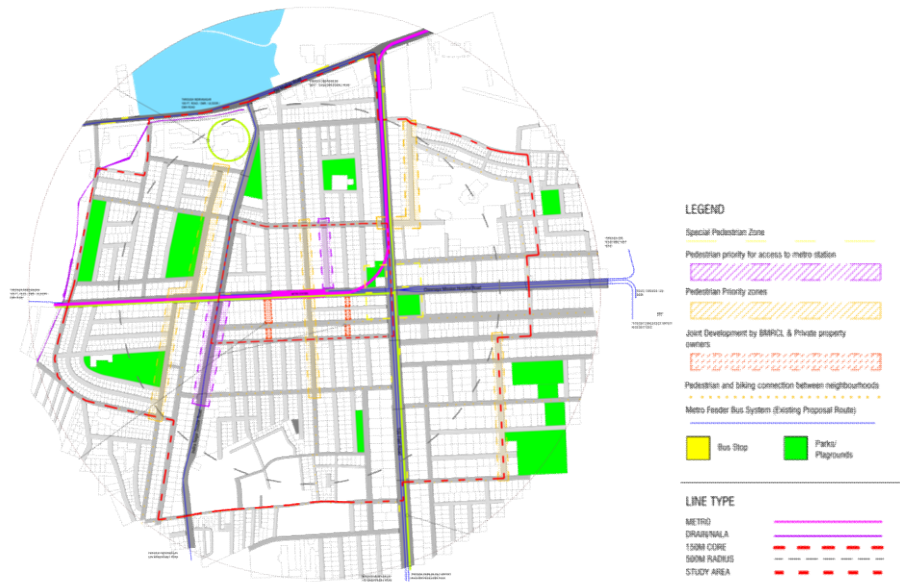
Development Control Regulations



Legend



Proposals: Safe Access



Phase II

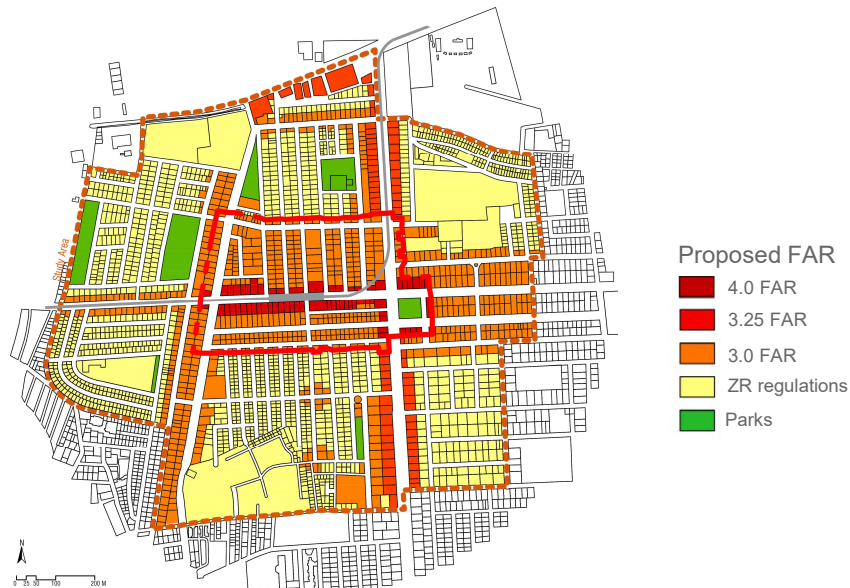


Phase III

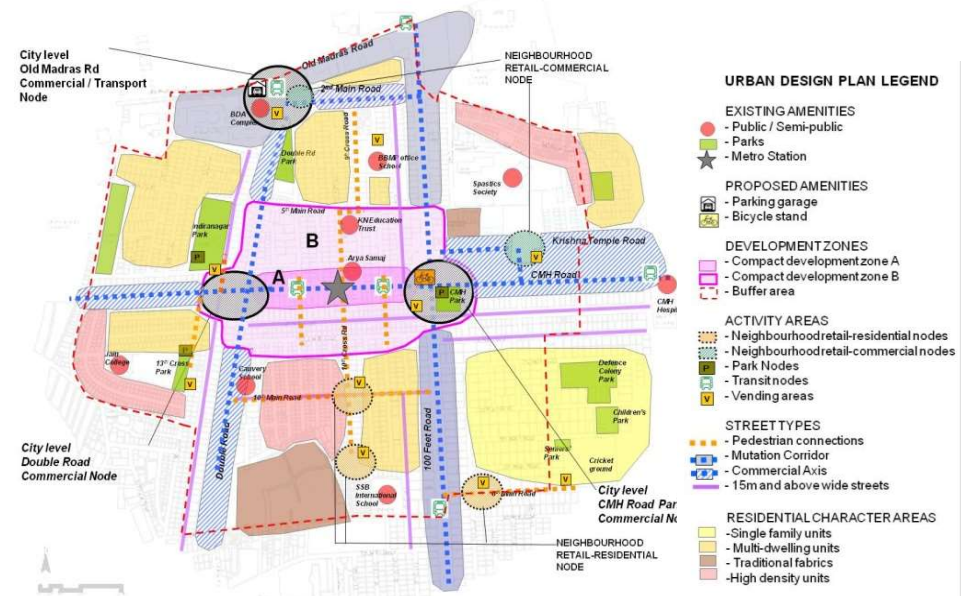


Views of proposal

Proposals: Urban Design



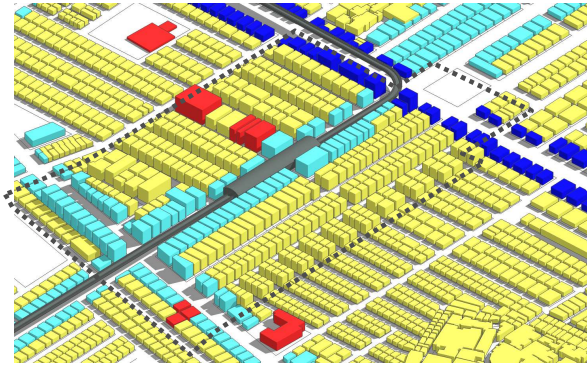
Proposed FAR



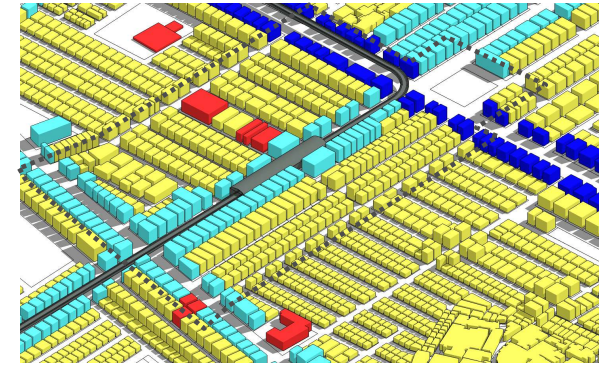
Urban Design Concept



Scenario 1: RMP 2015

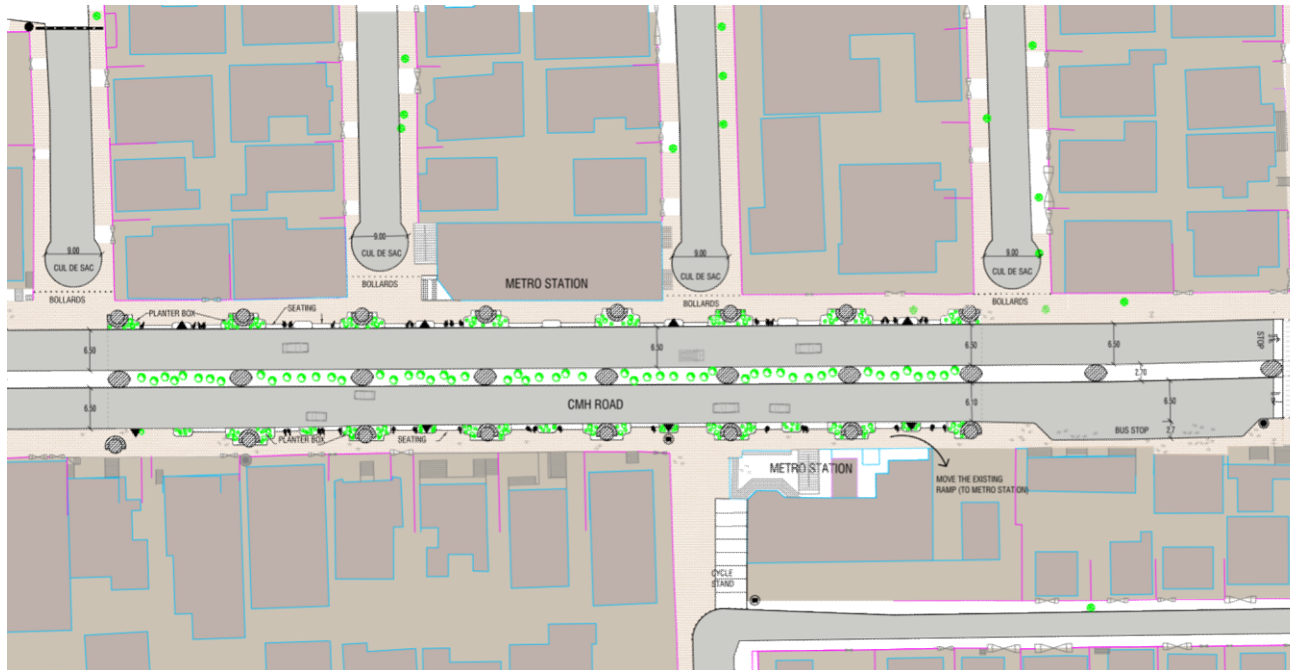


Scenario 2: RMP 2015 + UDD



Scenario 2: PROPOSAL

CMH under the Metro Station

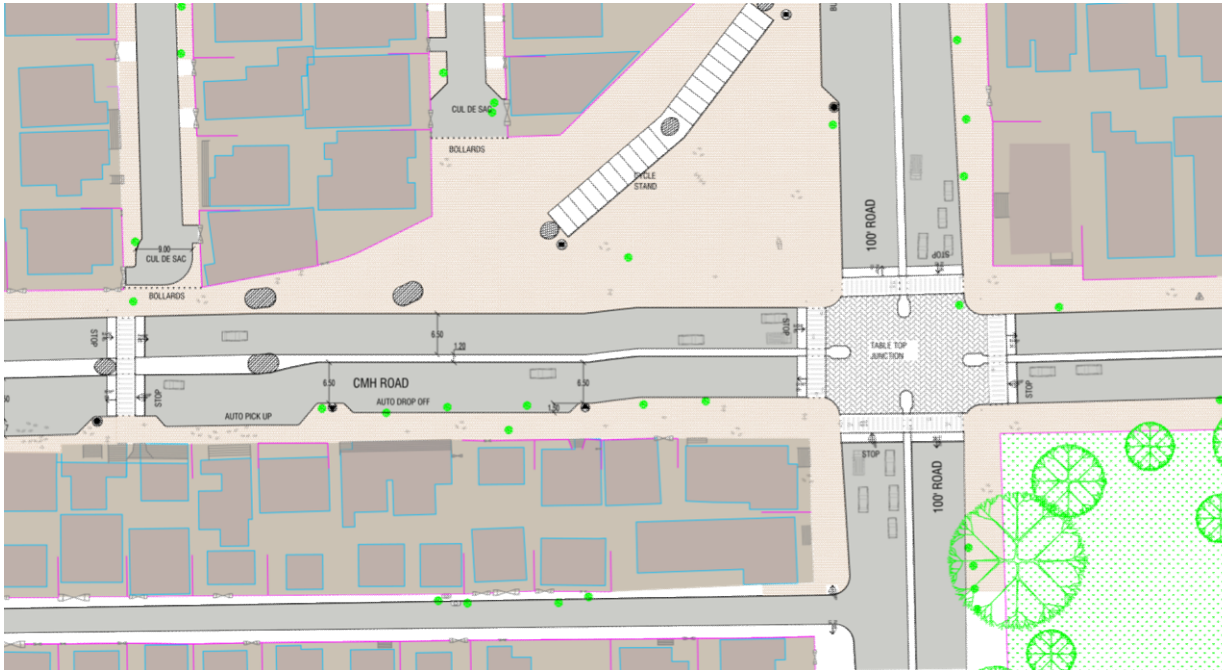


Detailed under metro station



Key map

Junction of CMH Road and 100' Road

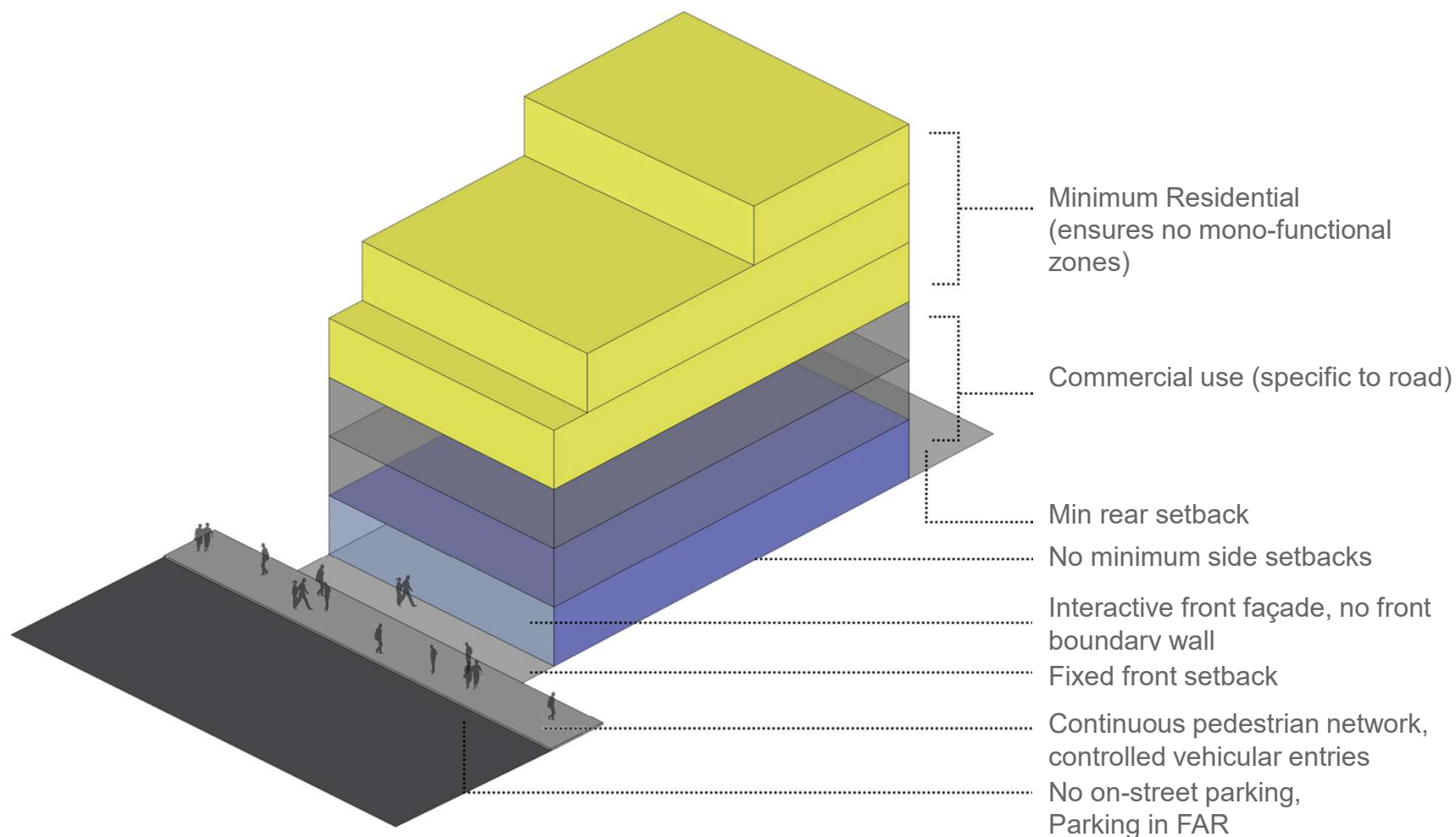


Detailed junction

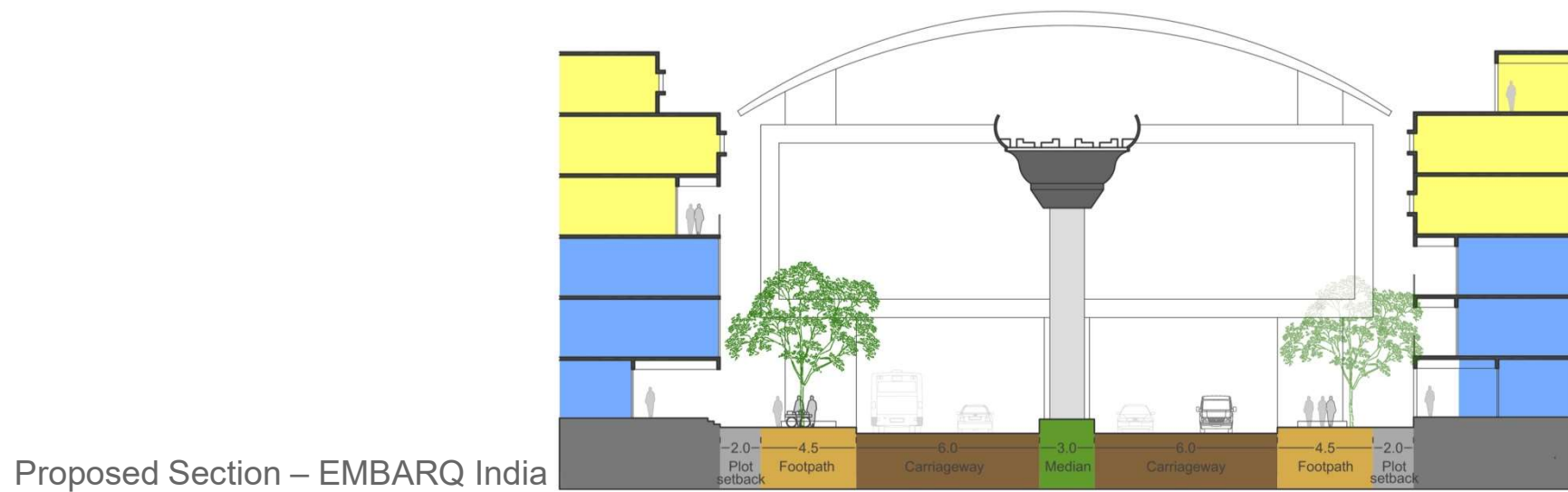
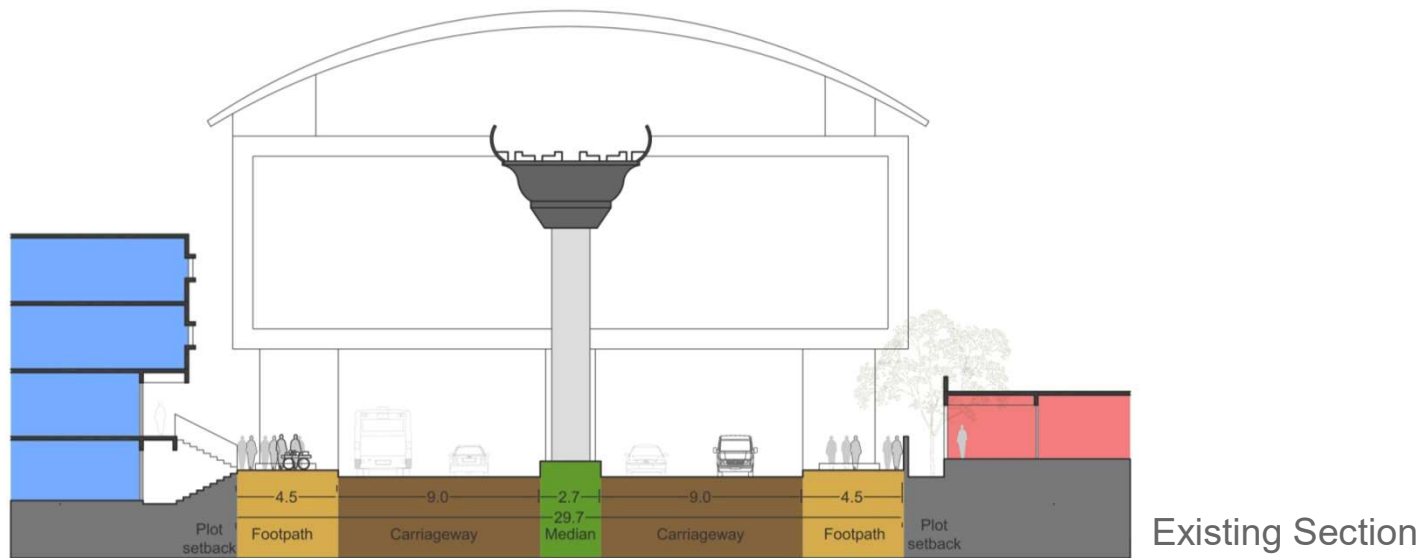


Key map

Detailed Proposals: Compact Zone A

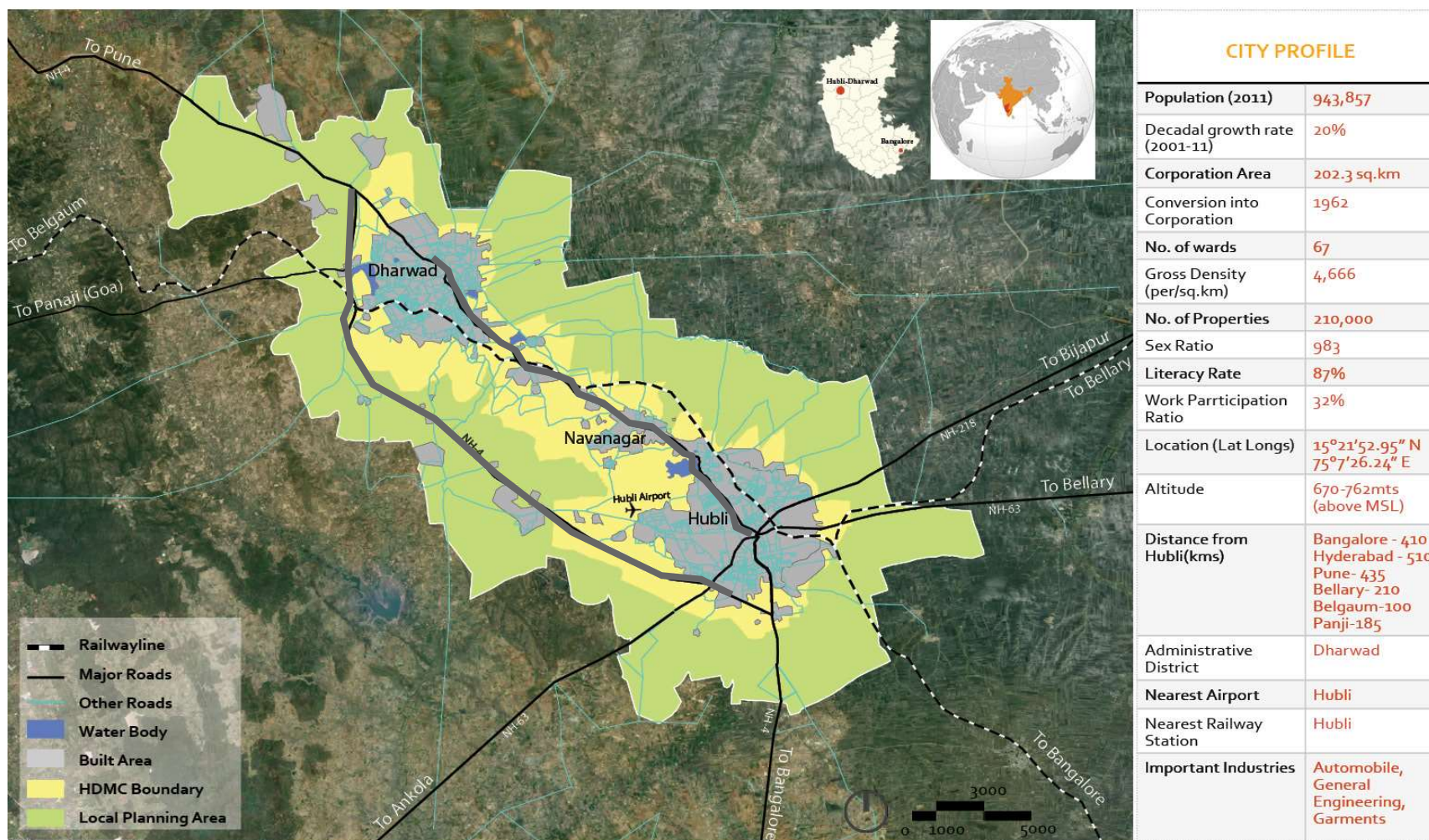


Sections : Compact Zone A



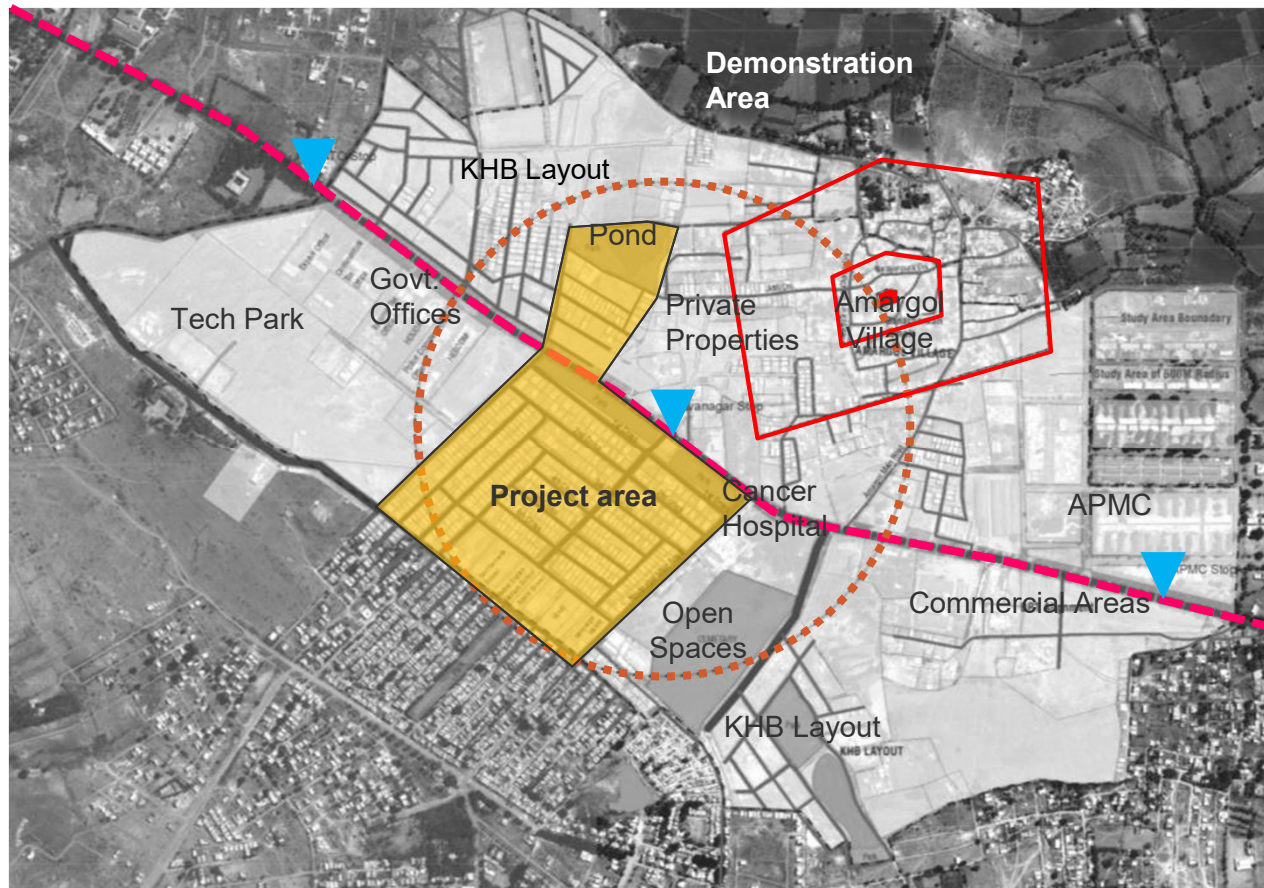
Hubli- Dharwad TOD proposal for Navanagar

Background and Objective



- **Objective** – Demonstrate TOD around BRT station in Navanagar area and scale it to the rest of the stations along the entire corridor of BRT in Hubli-Dharwad.

Project Area and applied concept

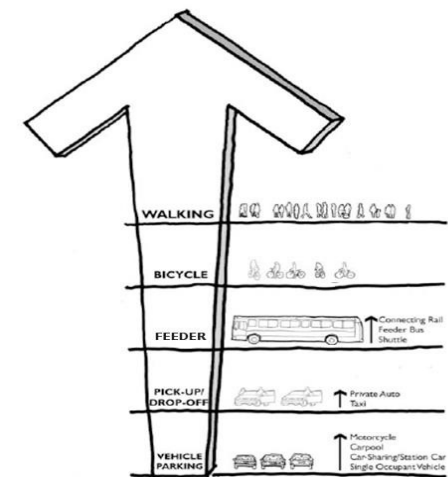


Public Spaces

1. Central Spine
2. Plaza
3. Temple & Pond

Safe Access - Streets

5. Streets with dedicated cycle track
6. Streets without dedicated cycle track



Proposals



Existing View of Street adjacent to Park



Proposed View of Street adjacent to Park



Existing View of Local Road near Central Spine



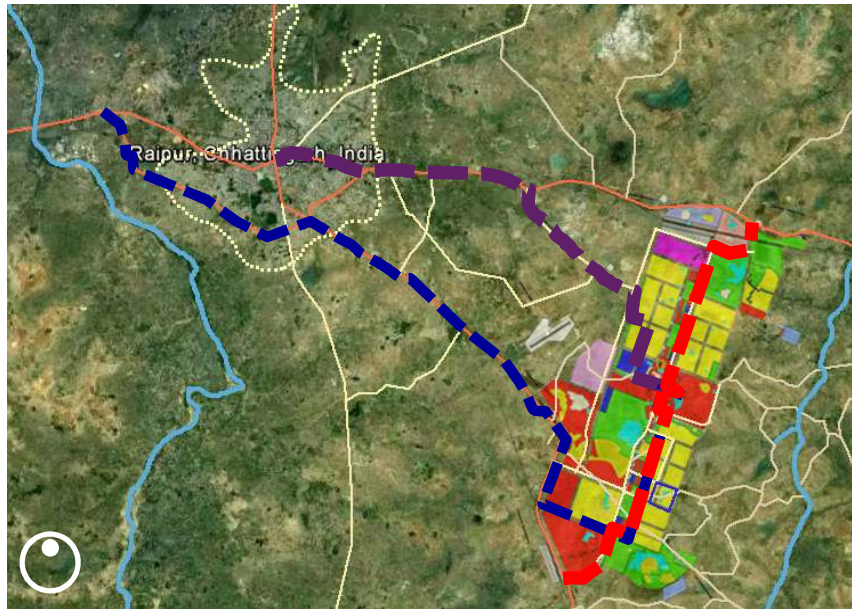
Existing View of Local Road near Central Spine

Accessible, Safe and Inclusive Neighbourhood design in a Green-field scenario

Case – Naya Raipur, Sector 31

Background & Objective

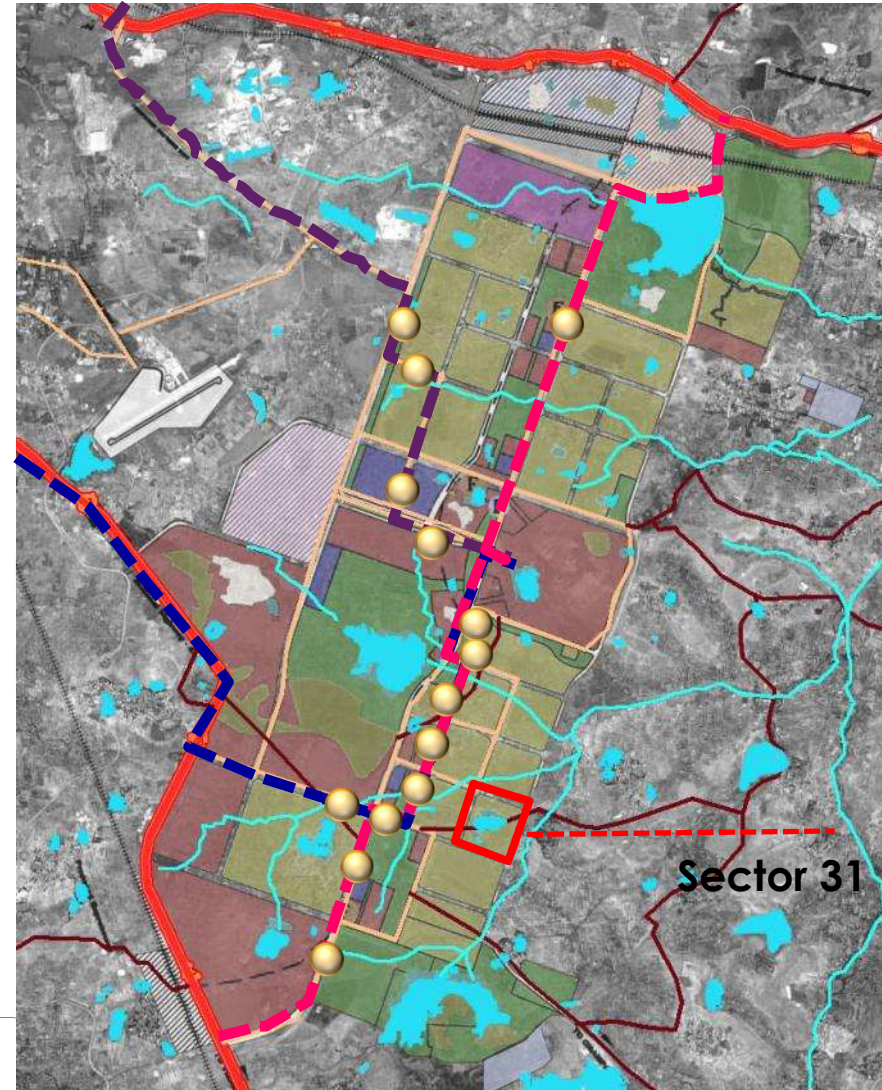
- Project type: Green field
- Demonstration Site : Sector 31 - Residential Site admeasuring 60.3 hectare.
- 16,000 population as per proposed Master Plan.
- Project worth is INR 300 Crore.



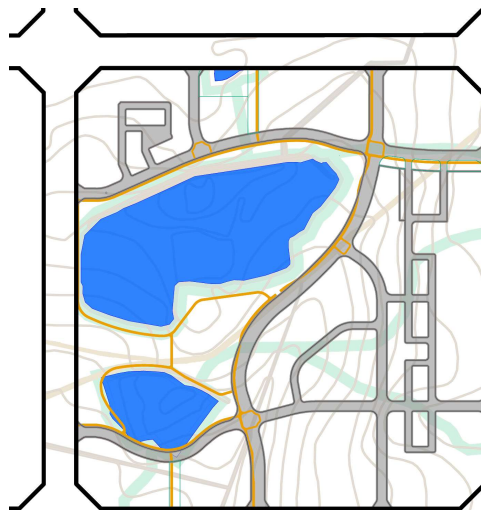
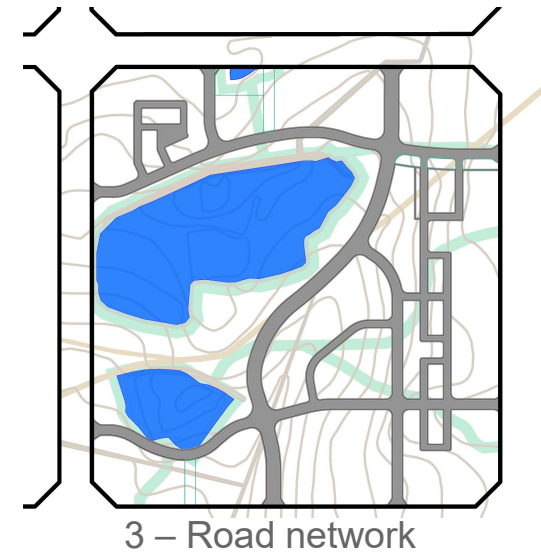
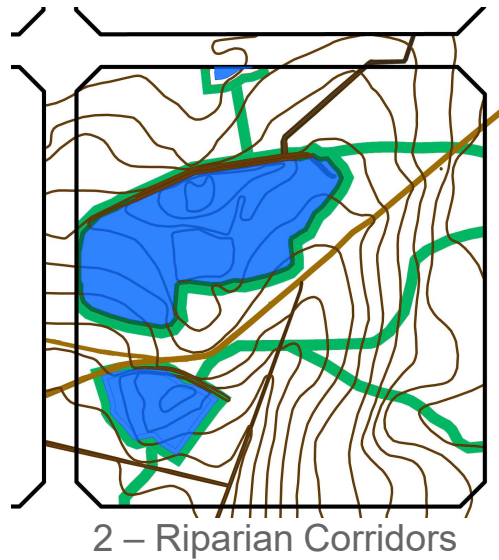
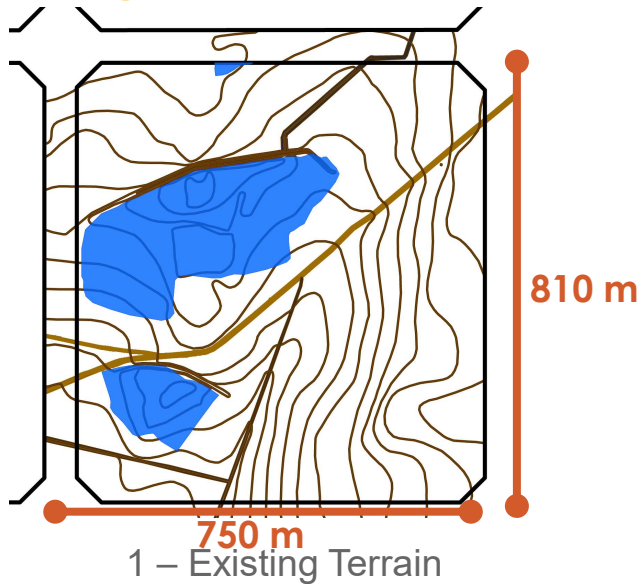
Need for the project:

- To integrate TOD principles in Designing the city.
- To preserve natural terrain and water networks.

Source:
http://wricitieshub.org/sites/default/files/Accessible_Safe_and_Inclusive_Neighbourhood_design_in_a_Green-field_scenario.pdf



Layered approach to Sector Design



Source:

http://wricitieshub.org/sites/default/files/Accessible_Safe_and_Inclusive_Neighbourhood_design_in_a_Green-field_scenario.pdf

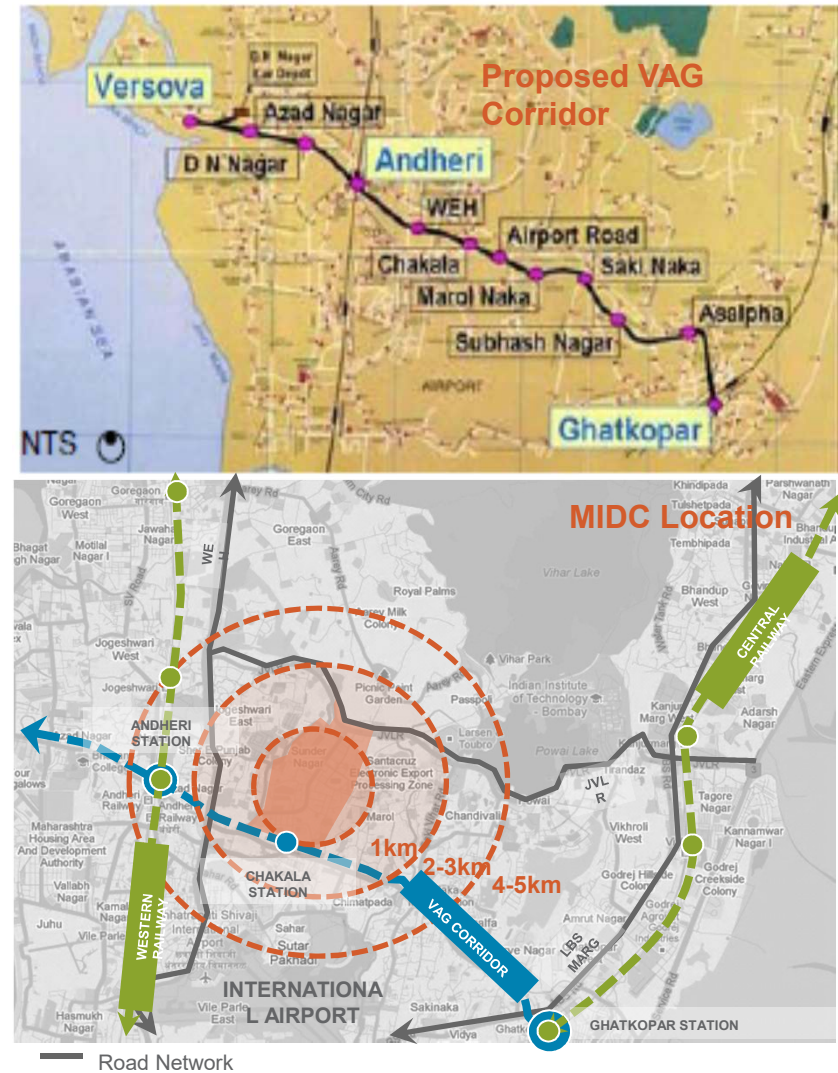
Reimagining MIDC Marol, Mumbai

Background

- Location : MIDC Marol is adjacent to Chakala Metro Station located on the proposed VAG corridor.
- MIDC Marol is a planned industrial area in 1961 with an area of 127.52 Ha.
- Floating Population: ~ 1.8 lakh people (2012)
- As per DPR Mumbai MRTS Project: VAG Corridor, (Feb 2005) the area is expected to have 2700 persons/ hr (45 p/min) in the year 2021.

➤ Need for the Project:

- Industrial to business district with excellent public transport connectivity
- Affordable real estate compared to CBD's.
- Main mode of transport: 56% walk, bicycle and use public transport
- Estimated number of pedestrians during a peak hour =1,05,000*



*Includes predominant mode of transport, last mile connectivity and stage of trip i.e. from bus stop or train to the office; does not include SEEPZ and residential areas

Need & Objective

Existing Scenario of Streets



MIDC: Insufficient footpath widths and large pedestrian volumes



MIDC: Poorly maintained walkways



MIDC: Inaccessible and unclean walkways

Continued...

- To provide a safe, comfortable and convenient environment for pedestrians within MIDC Marol .
- Improve pedestrian access to Chakala metro station.
- Act as a pilot for improving pedestrian access and mobility, providing amenities, regulating street vending and parking in other areas.



Main mode of transport to and from MIDC Marol

Approach



Approach

- Streets as Public Spaces
- Plan for Women's Safety, Universal Access & Vendors in Street Design



Opaque edges



Semi-porous and porous edges draw people



Proposals

Pedestrian Priority: Complete Streets

◄.....► Introducing pedestrian networks

Parking Management: TDM

PP Parking management strategy

■ Parking private vehicles in depots

Enhanced Safety and Security: Complete Streets

— Road Safety in Street Design

● Intersection geometry corrections

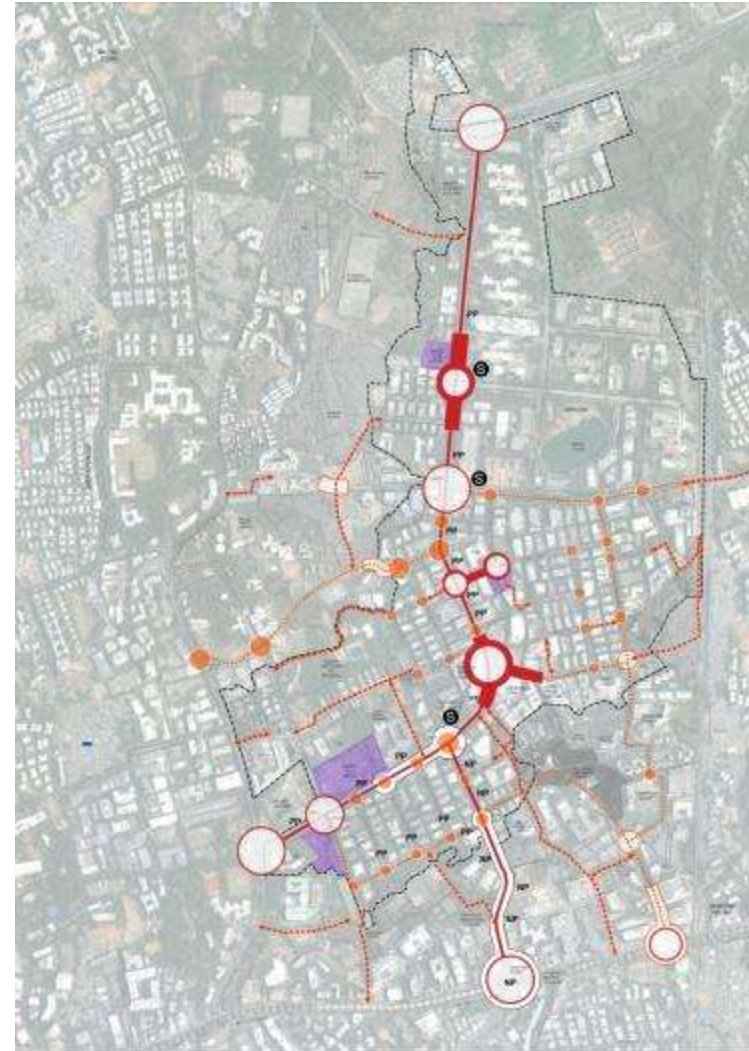
An Enhanced Public Realm: Public Spaces

Design Streets as Public Spaces

○ Creating Nodes / Place markers

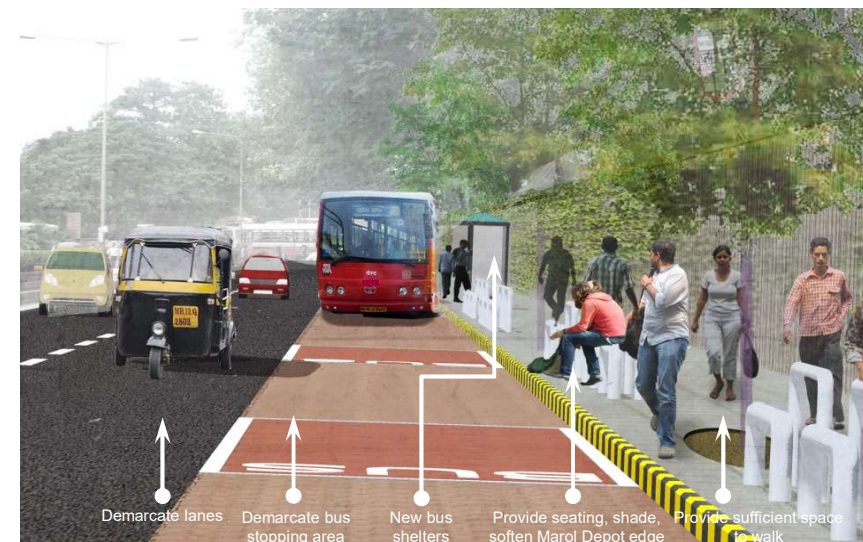
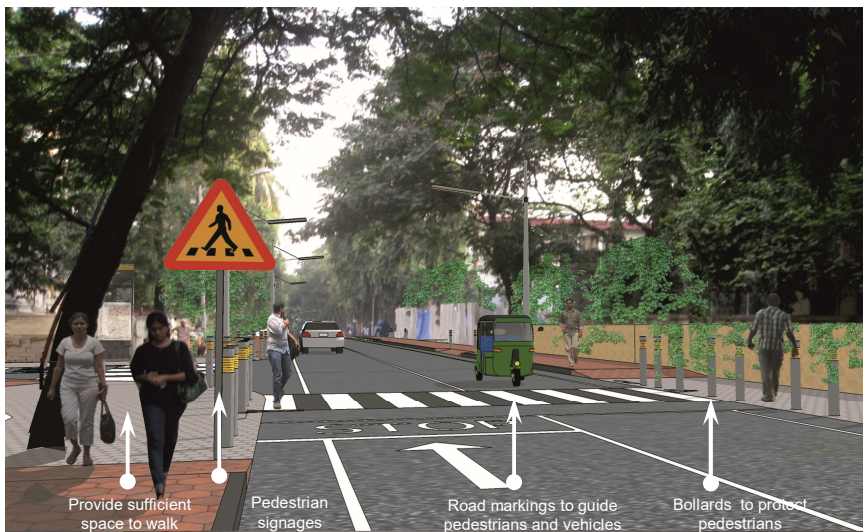
SV Street Vending Strategy

SS Street Furniture and Signage guidelines



Proposals

Safe and Secure Streets



Continued...

- Coordinated Signage System
- Nodes or Place Markers



Signage at major, minor nodes, streets

Source: EMBARQ India

Signage at bus shelters

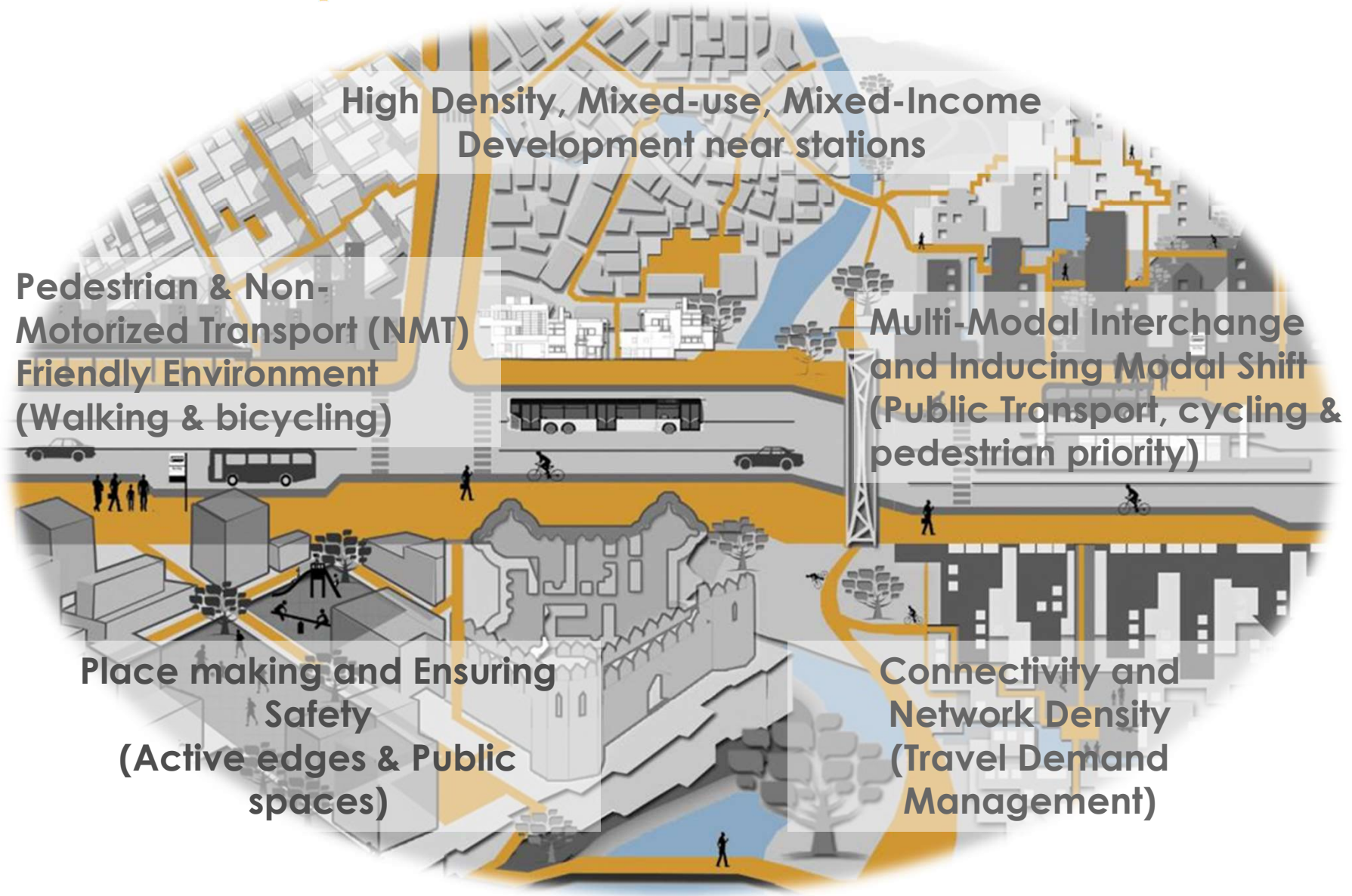


Source: Andrew Collins ;
<http://gaytravel.about.com/od/gaydestinationgalleries/ig/Photos-of-Gay-Asheville/Flat-Iron-Sculpture.htm>



Delhi TOD Policy

TOD Principles



THANK YOU!

<http://embarqindiahub.org/>